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ABSTRACT

This report presents a method of teaching first-year typewriting to a large group of students by using individualized instruction and multimedia techniques. The method presented was implemented at Napa College (California) during the fall quarter of the 1975-76 school year and was evaluated soon thereafter. In order to measure the success of the method, the author compared the instructional costs, withdrawal rates, and student outcomes for a group of 30 students who had been exposed to the traditional teacher-directed teaching method and 30 students who had been exposed to the new method. Results indicated that: (1) the individualized typing program was as effective in developing speed and accuracy in beginning collegiate typewriting as was the traditional method, (2) the withdrawal rate of the students in the traditional group was significantly higher than the withdrawal rate of the students in the individualized instruction group, (3) the individualized instruction approach provided more efficient utilization of staff, classroom space, and business equipment than the traditional approach, and (4) the individualized instruction approach provided a lower cost per student than the traditional teaching method. A literature review is included, and the research methodology is detailed. (DC)

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DEVELOPMENT, IMPLEMENTATION, AND EVALUATION OF AN INDIVIDUALIZED INSTRUCTION TYPING PROGRAM

GEORGE R. HAGEN

A MAJOR APPLIED RESEARCH PROJECT
PRESENTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE DEGREE OF DOCTOR OF EDUCATION

NOVA UNIVERSITY

1975

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Abstract of a Major Applied Research Project Presented to Nova University in Partial Fulfillment of the Requirements for the Degree of Doctor of Education

DEVELOPMENT, IMPLEMENTATION, AND EVALUATION OF AN INDIVIDUALIZED INSTRUCTION TYPING PROGRAM

By
George R. Hagen

April, 1976

Purpose

The purpose of this study was to develop, implement, and evaluate an individualized instruction typing program at Napa College.

Procedures

The procedures of this study included the design and development of a method of teaching first-year typewriting to a large group of students using individualized and multi-media techniques. This work was completed by the author during the period from January, 1975 to August, 1975.

The individualized typing program was implemented during the fall quarter of the 1975-76 school year. During this period the program was revised and refined prior to testing.

The evaluation procedures called for a comparison of instructional costs, withdrawal rate, and student outcomes between the traditional, teacher-directed teaching method (control group) and the individualized instruction teaching method (experimental group).

The control and experimental groups were each comprised of thirty randomly selected students drawn from two stratified populations.

The experimental group experienced no group teaching by the instructor during the quarter. All instruction was presented by prepared instructional materials delivered by an audio-visual approach, printed matter, and individual help from the instructor or instructional assistant. The experimental students followed an individual progress plan through a series of 50 lessons. Each lesson contained a performance objective that had to be met before the student could progress to the next lesson.

The control group was taught by an instructor in a manner consistent with commonly accepted typewriting instructional methods. Lessons were presented directly to the class by the instructor using a lecture approach. Both groups used the same text materials.

A pretest was given to determine the effectiveness of the randomization of the sample groups. This test confirmed the assumption that there was no significant difference in the initial typewriting performance of the two treatment groups.

Results and Conclusions

The findings of this study support the following conclusions:

1. There is no significant difference between the control group and the experimental group in the

mean straight-copy speed score as measured by the posttest. The individualized typing program is as effective as teacher-directed group instruction in developing speed in beginning collegiate typewriting.

2. There is no significant difference between the control group and the experimental group in the mean straight-copy accuracy score as measured by the posttest. The individualized typing program is as effective as teacher-directed group instruction in developing accuracy in beginning collegiate typewriting.
3. The withdrawal rate of the students in the control group was significantly higher than the withdrawal rate of the students in the experimental group.
4. The individualized instruction approach provided more efficient utilization of staff, classroom space, and business equipment than the traditional approach.
5. The individualized instructional approach provided a lower cost per student than the traditional teaching method.

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CHAPTER I

INTRODUCTION

To meet the diverse needs of student bodies that are becoming increasingly heterogeneous, community colleges are turning to new instructional approaches. Gleazer (1973) notes a trend toward greater institutional responsibility for student learning and describes the changing approaches as being more "consumer oriented." McCabe (1974) states that community colleges are seriously concerning themselves with developing learning arrangements that are designed with the idea that each individual has his own needs and his own base of experience and competencies, and that learning programs should be arranged to suit the individual. The personalization of instruction has become a very important goal.

Especially well suited to the individualized learning approach are the skills taught in business and office education. Typewriting has traditionally been treated as a teacher-directed skill. Today, however, the wide use of mixed media in the classroom, as well as the general acceptance of behavioral techniques in many community colleges, has made individualized typing instruction practical and possible.

I. BACKGROUND AND STATEMENT OF THE PROBLEM

The business department at Napa College has been faced with a problem in recent years that is becoming more prevalent at many community colleges. This is an increase in enrollment in typewriting classes and a desire, on the part of the faculty and administration, to provide quality education for each individual of this increased and diverse student population.

Napa College has offered five typing courses of varying skill levels, in the traditional, teacher-directed instructional method. Individual day course offerings were normally limited to one quarter per year with an enrollment maximum of 40 students per class. This instructional approach restricted the number of students who could enroll each quarter; offered little flexibility in class scheduling for the student during the school day or year; had a median student withdrawal rate of 36 percent during the last five years; and, most important, did not take into account individual differences in student learning rates.

Cross (1975), in an address to the Annual Conference of the California Community and Junior College Association, states that:

> There are significant individual differences on three major dimensions of learning. People differ in learning rate, learning style, and in their motivation and talents for various types of learning tasks. If we expect learning to have maximum impact on the development of individuals, we must offer options with respect to pacing, method of instruction, and curricular content.

II. PURPOSE OF THE STUDY

The purpose of this study was to develop, implement, and evaluate an individualized instruction typing program at Napa College. The major research questions included the following:

1. What is an effective design for an individualized instruction typing program for Napa College?
2. What prepared instructional materials and equipment are available for an individualized instruction typing program?
3. Does the individualized instruction typing program make more efficient use of staff and equipment than a traditional teacher-directed typing program?
4. Does the individualized instruction typing program significantly affect the overall terminal typewriting achievement of the students?
5. Does the individualized instruction typing program significantly affect the withdrawal rate of students?

The two teaching methods involved in this study were the traditional, teacher-directed teaching method referred to as the control group, and the individualized instruction teaching method referred to as the experimental group. The following hypotheses were tested:

1. There is no significant difference between the control group and the experimental group in the mean straight-copy speed score as measured by the posttest.

2. There is no significant difference between the control group and the experimental group in the mean straight-copy accuracy score as measured by the posttest.
3. There is no significant difference between the control group and the experimental group in the mean withdrawal rate.

III. DELIMITATIONS OF THE STUDY

This study was delimited to the following:

1. The students selected for this study were enrolled in beginning typewriting during the fall quarter, 1975, at Napa College.
2. The students selected for this study had no previous formal typewriting instruction.
3. The control and experimental groups each contained a random selection of 30 students.
4. The students selected for this study were free of physical handicaps that would limit their ability to typewrite.
5. The instructors participating in this study had at least ten years of teaching experience prior to this study.

IV. LIMITATIONS OF THE STUDY

The author could not control or measure all conditions of the learning situation. Therefore, uncontrolled or unmeasured factors such as the following may have contributed to the outcome of this investigation, but are not discussed in this report.

1. Quality of instruction related to teacher characteristics.
2. Physical environment of the facilities used by students in the study.
3. Equipment used by the students in the study.
4. Emotional and/or physical state of individual students due to classroom climate, or other factors, during the period when tests were administered.
5. Self-motivation, family responsibilities, or material support of students in the study.
6. Student knowledge that the individualized instructional approach was "different" from the traditional teacher-directed approach.

V. DEFINITION OF TERMS

The following terms are defined or discussed, to aid in the understanding of this study:

1. Individualized Multi-Media Typewriting Instruction.

This term refers to an instructional approach which emphasizes individual progress of the student. In the project

reported herin, all teaching was done by means of prepared instructional materials delivered by slide projectors, audio cassette players and printed matter; with individual assistance, but no lectures, by the instructor. The instructional approach enabled each student to proceed through the program at his own pace. The instruction provided for flexible, individualized scheduling. Students were able to attend classes at any times suitable to them, during established laboratory hours, as long as they were in attendance 250 minutes per week.

2. Traditional Typewriting Instruction. This term refers to an instructional approach in which lessons were presented directly to the class by an instructor. Classes met approximately 50 minutes per day, five days per week, at a designated time.

3. Typewriting Achievement. This term refers to the terminal typewriting achievement of each student as measured by the posttest. Speed and accuracy on straight-copy material were included.

4. Withdrawal Rate. This term refers to the number of students who remained enrolled in class at least three weeks but not through completion of the course.

5. Beginning Typewriting. A beginner's course for students who have not had previous training in typewriting or who need a complete keyboard review. Correct posture, mastery of the keyboard, centering, erasing techniques, basic

letter styles, introduction to tables, and initial experience with forms were taught.

6. Pretest. This term refers to the standardized typewriting ability test that was administered at the beginning of the experiment to all participating students in order to determine the initial typewriting ability of each student.

7. Posttest. This term refers to the standardized typewriting ability test that was administered at the end of the experiment to all participating students in order to determine the terminal achievement of each student. The posttest was of the same format as the pretest.

VI. INSTITUTIONAL SETTING

Napa College is a public, two-year, open-door comprehensive community college. The College District contains four incorporated areas: The city of Napa, located at the southern end of Napa County, had a population in 1974 of 45,450; Yountville, some nine miles north of Napa, had a population in 1974 of 2,580; St. Helena, some seventeen miles north of Napa, had a population in 1974 of 3,350; and Calistoga, some nine miles north of St. Helena, had a population in 1974 of 1,832. The total County population was 87,100. Since the College District and the County lines basically coincide, the County figure is relatively accurate for the population of the District.

The main campus is suburban, located at the edge of the city of Napa. To serve the diverse needs of the district--both geographic and instructional--three college centers were opened in the upper Napa Valley area: The St. Helena Center (1972), the Lodi Lane Arts and Crafts Center (1974), and the Calistoga Center (1974).

Napa College students are fairly typical of open-door community college populations, being more diverse in their social, demographic, and economic characteristics than are students at more traditional kinds of institutions.

The NAPA COLLEGE ACCREDITATION SELF-STUDY (1975) notes that of the 5,277 students enrolled for credit courses in 1974, about 49 percent were in technical-vocational programs, and 51 percent in college transfer or in remedial or developmental programs. An additional 3,000 - 4,000 persons were enrolled in various kinds of non-credit and adult continuing education courses.

VII. ORGANIZATION OF THE STUDY

This study is presented in five chapters.

Chaper I provides an introduction and background to the problem, the purpose of the study, deliminations, limitations, definition of terms, institutional setting, and the organization of the study.

Chapter II is a review of the literature directly related to the study.

Chapter III reports the study activities and the procedures used in obtaining and analyzing the data utilized in the study.

Chapter IV is a report of the findings of the study.

Chapter V includes the summary, conclusions, and recommendations of the study.

CHAPTER II

REVIEW OF RELATED LITERATURE

The purpose of this chapter is to summarize and analyze the literature that is directly related to this study. This chapter has been organized into the following four sections: (1) Need for Individualized Instructional Techniques, (2) Basic Concepts of Individualized Instruction, (3) Instructional Outcomes Resulting from Individualized Instruction, and (4) Individualized Typewriting Instruction.

I. NEED FOR INDIVIDUALIZED INSTRUCTIONAL TECHNIQUES

Today more than two million students are enrolled in community colleges. Over 1,000 two-year colleges already exist in this country and more are being added every year. (Bushnell, 1973) The community college movement has solid historical and philosophical foundations. It occupies a unique position and seems to promise a solution for many of the nation's pressing social and educational needs.

During the 1960's and the 70's, community colleges have made good on the promise of the "open door." The open-door policy implies acceptance of the concept of universal higher education. Community colleges have become the primary vehicle for social and economic advancement for the lower two-thirds of the population. Dwyer (1971) identifies the

community college student body as being extremely heterogenous that is often characterized by low economic and social status, low educational achievement, marginal employment, and limited participation in coqmunity organizations.

Cross (1975) notes that the explosive growth of community college open admission practices has virtually eliminated the barriers imposed by poor educational backgrounds. As a result the 1960's represented unprecedented growth in college enrollments and most of the growth has come from previously unserved segments of the population.

Although the community college movement has achieved success in providing access to the college, it has not demonstrated the ability to provide the same level of student success (persistence and achievement) in college.

Goodlad (1973) states that:

> Education has, for too long, pointed with pride to those who have "made it" while disregarding the many who have "fallen by the wayside." Although we have chosen not to notice the general ineffectiveness of education, the overall failure is glaringly apparent in dropout rates, in barely minimal learning on the part of many who do remain in school and in growing alienation among the young of all colors and classes.

Dwyer (1975) notes that the glaring inadequacies of many community college programs should lead educators to seek new approaches geared to individual learning and learning deficiencies. "If community college instructors can be taught to become effective teachers, and are willing to be held accountable for student learning, the promise of the open door can be fulfilled."

Cross (1975) notes the importance of individualized learning techniques in the following statement:

> If the Access model is to have meaning it must be supported by a Learning model that makes access to higher education more than a hollow victory. The provision of quality education that makes a difference to individuals is the task that lies ahead, and educators are beginning to meet that challenge with a new surge of interest in a variety of techniques and methods known collectively as the individualization of instruction.

In summary, the literature indicates that community colleges have been successful in providing access to higher education for all. However, along with providing access, the community colleges must provide meaningful and worthwhile educational experiences for this new student population. This is the challenge that still must be met.

II. BASIC CONCEPTS OF INDIVIDUALIZED INSTRUCTION

Research in the individualization of instruction has become increasingly important with the diversity of student background and abilities in open-door community colleges.

There are various definitions and degrees of individualized instruction. They vary from the total implementation of the individualized concept, in which individual learning materials are developed for each student who then works at his own pace, to isolated elements used within a typical, traditional instructional system.

Herrscher (1971) credits Harvard professor B. F. Skinner for pioneering the programmed instruction movement of the 1950's from which evolved the teaching principles which are

characteristic of both programmed instruction and the broader individualized instruction approach: presenting subject matter in small steps, active student involvement, immediate confirmation of student progress, positive reinforcement, student self-pacing, and revision of instructional materials until the desired level of achievement is attained by the learners.

Glazer (1968) defines individualization simply as the "adaption of instructional procedures to the requirements of the individual learner."

Ferguson (1971) defines individualized instruction in the following manner:

> Individualized instruction is not a method, it is not a procedure, it is not a way of organization. It is a philosophy of teaching. It responds to the values of the individual, and it respects the individual as a person. It demands that the teacher, cognizant of the wide range of interests and abilities in his students, be a resource person--one who provides materials, supplements the ideas of students, and provides the situation and the atmosphere for learning.

Tosti and Harmon (1972) define the degree of individualization in terms of instructional management. This means that "individualized instruction is a function of the frequency with which the decision to change the instructional presentation is made as a result of the assessment of an individual student's achievements, needs or aspirations."

Weisgerber (1972) states that:

> Learning can be said to be individualized to the degree that the learner believes that his education is personalized to meet his needs and facilitates and encourages his independent progress. More fully stated, learning has been individualized to the extent that he believes:

1. his progress is largely dependent on his own effort,
2. his performance and preference can influence a selection of modules of subject matter,
3. he can decide whether he wants to work independently or interact with others in furtherance of his studies,
4. he has the freedom to select instructional resources to suit his own learning "style," such as a choice between print or non-print media, given comparable exposition of the subject matter,
5. he views the school personnel, including the teacher aide, librarian, principal, and others such as his classmates, primarily as human resources rather than as supervisors or competitors,
6. he exhibits an active purposeful approach to learning tasks when unsupervised, and thinks of school as only one of the settings in which learning can occur,
7. he has control, within admissible school standards, for where and when he studies,
8. he feels that the intended outcomes of instruction are relevant and obtainable,
9. he understands how to proceed towards the accomplishment of those outcomes,
10. he is aware that he is evaluated against his own potential rather than that of others, and is given fairly frequent knowledge of his status relative to his learning goals.

Baker and Goldberg (1970) identify individualized instruction as consisting of these features:

1. Student features. To as great an extent as possible the abilities and requirements of each student must be considered in planning his overall program of instruction and each of its component parts.

2. Teacher features. Teachers serve varied roles--as members of the system analysis curriculum development and evaluation team, as diagnosticians, and evaluators, and as counselors. The individualized learning system provides for significant amount of teacher-student interaction.

3. Behavioral objectives. Well-defined sequences of progressive objectives...are established as guidelines in setting up an individual student's program of study. The student has available in writing, the objectives towards which he is working which define what he is to learn.

4. Multiple Activities. Each student uses a variety of materials and procedures. The teacher encourages students to help determine the materials they work with and the procedures they follow. A student pursues his objectives individually, with small groups of classmates, or with his teachers, dependent upon the requirements of each objective.

5. Study Requirements. Each student proceeds through his program at his own pace. The time he spends in a given subject area is planned by his performance rather than by an arbitrary time allotment.

6. Student Evaluation. Progress of each student is continuously measured by comparing his performance with his own specific objectives. Testing includes: (1) instruments for assessing the student's abilities and accomplishments, (2) diagnostic placement, (3) pretests and posttests for each segment of an individualized learning system, and (4) tests to provide the student both reinforcement and knowledge of individual progress.

In summary, an individualized instruction teaching approach is a tested system of learning and evaluation that normally includes the following:

1. Pre-assessment tests to determine (1) whether the student already has the prerequisite capabilities to profit from the instruction; (2) whether the student already possesses the behaviors specified in the objectives; and (3) where the student, who possesses some but not all the specified behaviors, should be placed in the sequence of learning activities.

2. Course goals and lesson objectives stated in specific and measurable terms.

3. Learning activities and instructional approaches directed toward the appropriate lesson objectives.

4. Evaluation activities to (1) assess student learning; (2) assess teaching effectiveness of the learning materials; and (3) provide student reinforcement.

5. Consistent instructor contact with the student for instruction, observation, assistance, and evaluation throughout the course.

III. INSTRUCTIONAL OUTCOMES RESULTING FROM INDIVIDUALIZED INSTRUCTION

In the last few years many studies have been conducted to determine the outcomes of individualized instruction. Traditionally this research has been concerned with a comparison of the achievement of students taught by the traditional method to the achievement of those students taught by an individualized method.

Larson (1962) found that accounting students taught in an "enriched" laboratory, with extensive use of visual aids and greater attention to detail and individualized instruction achieved significantly higher on teacher-made tests, than did students taught in a traditional accounting laboratory.

White (1970) conducted a study to determine if any differences in student achievement would be found when comparing an individualized approach and a traditional approach to nursing instruction. The control group was taught in the conventional manner. The experimental group received its instruction via tape, lecture, seminars, and teacher-developed syllabi. Behavioral objectives were used in the structure of the individualized program. White found that there were no significant differences produced in achievement levels of the two groups. She did find that student motivation, student participation, and use of facilities was higher in the individualized group.

Oen (1971) conducted a study designed to evaluate the effectiveness of an individualized learning method of instruction when compared to the general lecture-discussion method of instruction. There were 632 agriculture students in the study conducted at Michigan State University. Oen found that students using the individualized instruction method scored significantly higher than students of the lecture-discussion method in several subject areas. Included in the summary observations were the following:

1. Various types of motivation should be written into the subject matter manual as a substitute for teacher motivation.
2. Standards with which to compare themselves should be provided for students.
3. More audio-visual materials and learning-by-doing activities are appropriate.
4. Only interested students should be taught by the individualized learning method.
5. Students need to be motivated by the teacher.

McKenzie (1972) compared a learning systems approach to a lecture-demonstration approach of teaching the manipulative skills of office machines at the community college level. The variables included achievement, student use hours, and attitude.

The findings supported the hypotheses that the learning systems approach produced significantly higher level of student achievement on office machines. The group using the learning systems approach also used significantly less time for completion of the course than did the group using the lecture demonstration approach.

Recent research has included broader outcome measures in order to create the possibility for detecting unique, often higher order, effects of unconventional programs. These have included measurement of problem solving and success of transfer tasks, as well as measurement of affective outcomes. Some authors suggest that this may be a more complete strategy for determining the effectiveness of an instructional program.

Research by Orefice (1973) found no difference in achievement between accounting students utilizing the traditional or individualized instructional approach. However, he did find a differentiated outcome between learner types, with abstract students preferring the more individualized approach and concrete students not. Orefice also found individual instruction to be more efficient (student study time) than traditional instruction.

Elliott (1973) compared student outcomes of first year accounting students assigned to two instructional treatments, individualized and traditional. While no differences were found in knowledge acquisition, individually taught students outperformed traditionally taught students in problem-solving initiative and ability. It was concluded that the individualized approach to teaching accounting in the two-year college was more effective than the traditional approach.

In summary, the research does not prove conclusively that the individual instructional approach produces significant differences in student achievement levels when compared

with traditional classroom procedures. However, it is noteworthy that in no instance studied did the traditional classroom procedure show significantly greater student performance than the experimental approach.

The study findings do indicate a relationship between the individualized instructional approach and higher student motivation, student participation, and use of facilities.

IV. INDIVIDUALIZED TYPEWRITING INSTRUCTION

Several recent studies have been conducted to determine the effectiveness of individualized instruction in the typing classroom.

Warner (1969), in an experimental study, compared the terminal achievement of intermediate collegiate typewriting students when instructed under three different teaching methods. The three teaching methods were: (1) the traditional teacher-directed classroom environment (traditional group); (2) the tape-recorded and teacher-directed combination classroom environment (tape-teacher group); and (3) the programmed instruction and tape-recorded, non-teacher directed, classroom environment (programmed group).

Warner concluded that the teaching methods do not favor any specific ability group or experience group; students achieve the same terminal typewriting achievement with any of the three teaching methods regardless of their initial ability levels or the amount of previous typewriting instruction. He further recommended:

1. Further research studies in individualized typing instruction should be conducted at other educational levels, such as junior colleges, technical schools, and secondary public schools, to determine how effective these three teaching methods would be in other educational settings.

2. Experimentation using programmed instructional materials in production typewriting should be done in educational institutions that are operating under flexible, modular scheduling systems.

3. Programmed instructional materials should be developed and experiments conducted in both beginning and advanced typewriting.

4. Those educational institutions desiring to more efficiently utilize staff and equipment should consider experimenting with programmed instruction in their production courses.

Thoreson (1971) conducted a study to determine the validity of individualized large-group multi-media instruction in the first year of typewriting. He used a population of 1,298 tenth-grade beginning typewriting students. From this population, he randomly selected 50 males and 50 females from both the experimental schools and the control schools. The experimental classes experienced no group teaching by an instructor in their year of typewriting instruction. All teaching was by means of video-tapes, wireless listening stations, audio cassette players, printed matter, films, and individual help from the instructor or clerical aide. Students progressed at their own rate through the course requirements. The control classes were taught by an instructor in a manner consistent with commonly accepted typewriting instructional patterns. Thoreson used tests from the Typewriting Achievement Test, First Year, developed by the Psychological Corporation. After 80 class

periods of instruction, Part Two, Form A, was given. Then following 160 class periods, Part Two, Form B, was administered. Thoreson analyzed the data using the three-way analysis of variance. The .01 level of confidence was used to determine the significance of the ratios. Thoreson concluded that:

1. Students taught in experimental large-group individualized multi-media classes type significantly faster on straight copy timings and production timings than students taught by traditional methods.

2. The students taught by the traditional method made significantly fewer errors on straight copy timings than students taught by a large-group individualized multi-media method.

3. The students taught by means of large-group individualized multi-media methods made significantly fewer errors on production timings than students taught by the traditional method.

Thoreson recommended that students be taught by means of large-group individualized multi-media approaches rather than by traditional methods for reasons of cost and student performance.

Frye (1972) conducted a study which compared the effects of a multimedia instructional systems approach with the effects of a traditional teacher-directed group approach in collegiate intermediate typewriting. The population for this study consisted of 175 students enrolled in intermediate typewriting in five public junior colleges. The traditional teacher-directed group was given "live" instruction throughout the term. Teacher demonstrations and explanations were provided for the lessons. Even though the daily performance objectives were

not always met by the students in the traditional group, a new lesson was presented on the next class date. The students in the multi-media instructional approach were to meet the minimum objectives of each lesson as stated in the syllabus before beginning the next lesson. They used the same materials as the traditional group; in addition, they used taped lessons and a syllabus listing the performance objectives. Three timed progress tests were used to evaluate student's skill levels at three different times during the experiment. The findings of this study supported the following conclusions:

1. The individualized multi-media instructional systems approach produced significant differences in the terminal typewriting achievement of the students after one term of intermediate collegiate typewriting instruction.

2. Intermediate typewriting (collegiate) students who were taught by the individualized multi-media instructional systems approach were able to type faster on straight copy materials. The speed gain for the control group was 3.58 words per minute and 6.49 words a minute for the experimental group.

3. Intermediate collegiate typewriting students who were taught by the individualized multi-media instructional systems approach were able to type certain production activities with fewer typewriting and placement errors. The score for the control group failed to reach the 2.00 (C grade) level. For the experimental group, only in one instance did the score fall below the 2.00 (C grade) level.

4. Intermediate collegiate typewriting students who were taught by the individualized multi-media instructional systems approach steadily gained a higher average score on basic information tests.

5. Prior knowledge of performance activities before an instructional unit is taught and attainment of minimum performance objectives before a student advanced to a new lesson, increases the efficiency in student learning.

Varnon (1973) conducted a study to compare the effectiveness of two methods of teaching problem typewriting in the secondary school beginning typewriting course. The two methods were a self-paced, programmed approach and a teacher-directed, non-programmed approach. The population for the study consisted of 787 typewriting students in two traditional, comprehensive suburban high schools. After the pre-experimental keyboard and skill building unit, the two groups completed four problem typewriting units. The programmed group proceeded through printed programmed units, the basic instructional source, at their own pace within the designated unit time periods. No group instruction was given to classes in this group. The teacher-directed group proceeded through the units by receiving group instruction on the concepts of the units and by performing the daily assignments made by the teachers. Testing included initial straight copy timed writings administered near the end of the pre-experimental unit and final straight copy timed writings and an eight-problem production test administered at the end of the experiment. Varnon found that:

1. The production form scores of the programmed group and the teacher-directed group were not significantly different at the .05 level.

2. The production speed scores of the two groups were significantly different, the difference being in favor of the programmed group, who completed the test approximately four minutes faster than the teacher-directed group.

3. The production accuracy scores of the two groups were significantly different, the difference being in favor of the teacher-directed group, who made approximately five and one-half fewer typographical errors on the test than the programmed group.

4. Neither method of instruction was found to be superior in teaching problem typewriting to students within either the upper, middle, or lower level of scholastic achievement.

5. The gains in straight copy accuracy of the two groups were significantly different, the difference being in favor of the teacher-directed group, who gained .67 gross words a minute more than the programmed group.

Varnon concluded that:

1. The self-paced, programmed approach using printed programmed materials as the basic instructional source is an effective method of teaching problem typewriting in the secondary school beginning typewriting course.

2. Self-paced, programmed instruction using printed programmed materials as the basic instructional source is as effective as teacher-directed instruction in teaching problem typewriting to students of all scholastic achievement levels in the secondary school beginning typewriting course.

Dupras (1973) compared the straight-copy typewriting speed and accuracy achievement of 132 high school sophomores after 15 weeks of instruction by two different methods. The control group was taught by the traditional, teacher-directed method; the experimental group was taught by the Automated Instruction Touch-Typing System, a multi-media, individualized program. The findings revealed that the experimental group scored 4.6 adjusted words per minute above the control group at the end of the experiment, an advantage of almost 19 percent.

Dupras concluded that the Automated Instruction approach was definitely associated with higher speed achievement.

Rigby (1973) conducted a study to determine if any differences existed in the production achievement of intermediate college typewriting students who were taught by the traditional teacher-directed method and those who were taught by individualized learning activity packages. The experiment was conducted at Northern Michigan University in 1972 for an eleven-week period. The control group was taught by the traditional teacher-directed method, which was expected to progress at the same rate each day, while each student in the experimental group was allowed to progress at his own pace with the use of learning activity packages. Rigby found that:

1. Students taught by the learning activity packages increased their speed over the students taught by the traditional method.
2. Students taught by the learning activity packages increased their accuracy over students taught by the traditional method.
3. Age and previous typewriting instruction were not good predictors of achievement for speed or accuracy on any of the unit tests or the posttest.
4. The results of the attitude survey indicated a positive reaction to the learning-activity-package method of instruction.

Rigby concluded that:

1. The learning activity package method of instruction is just as good as, and in some cases better than, the traditional method of instruction as measured by the student's typewriting speed and accuracy on the unit production tests.
2. The learning activity package method of instruction is better than the traditional

method of instruction as measured by the student's terminal typewriting speed as measured on the posttest.

3. The learning activity package method of instruction is just as good as the traditional method of instruction as measured by the student's terminal typewriting accuracy on the posttest.

4. The attitude toward the learning activity package method of instruction was quite positive.

Klemin (1974) compared the achievement and attitudes of students who experienced two different methods of intermediate typewriting teaching at Utah State University. The population included forty-two control group students and eighteen experimental group students. An instructional model was developed to allow the control group to move through the instructional model as a traditional structured group while the experimental group proceeded through the instructional model on an individualized basis. The design of the model included eight learning units, videotaped instruction, individual and group testing, and group study. The following recommendations were made:

1. Business educators should consider the individualized progress method of instruction as a viable alternative to the traditional structured-group method of instruction in all areas of intermediate typewriting except on manuscript production speed development.

2. Business educators should consider the individualized progress method of instruction as a viable alternative to the traditional structured-group method of instruction when favorable attitudes toward intermediate typewriting are important.

In summary, the research does not clearly indicate that one instructional approach is superior in developing typewriting speed and/or accuracy on straight-copy or production material. There is need for further research at the community college level in the following areas: (1) comparison of the effects of various instructional approaches on the student withdrawal rate, and (2) comparison of instructional costs and facility usage of various instructional typewriting programs.

V. CHAPTER SUMMARY

If the challenge of the community college is to provide quality education for each individual, then new experimentally sound instructional approaches must be developed for more effective and efficient utilization of staff and equipment.

An individualized instructional approach in the teaching of typewriting at Napa College seems to be feasible and desirable, and the research tends to support this method of instruction. In accordance with Chapman (1966), as educators,

> we must improve our courses and methods of teaching. We must stretch our imaginations, study current and proposed practices, experiment, and then make some bold decisions. We must accept new ideas, new techniques, and the media, not because they are moved or for the sake of change alone, but because they, and the other concepts coming from them, promise to increase our teaching effectiveness.

CHAPTER III

STUDY ACTIVITIES AND PROCEDURES

The purpose of this study was to develop, implement, and evaluate an individualized instruction typing program at Napa College.

I. DEVELOPMENT PROCESS

Initial Planning

Initial planning for the individualized instruction typing program began in the fall of 1974. The author met with the Napa College business faculty to define the curriculum requirement of the individualized program. This was followed by visits to several California community colleges including Solano, Skyline, Moorpark, Bakersfield, and Columbia to observe similar facilities in operation. The author then conducted a search of the literature for research experiments which measured the effectiveness of individualized typing instruction.

A proposal for the development of the typing program was then written and submitted to Dr. Arlin Taylor, Associate Dean of Instruction, for his approval. In February, 1975, the Napa College Board of Trustees approved the proposal and recommended grant funding application. (The proposal cover letter may be seen in Appendix A.) Financial support for the

project was approved by the California Postsecondary Education Commission under a Title VI-A grant of the Higher Education Act of 1965. (See Appendix B for the funding approval letter.)

The author, with the assistance of the business faculty, then developed the course goals and objectives for the typing program.

Selection of Instructional Materials

A search was conducted to determine if there were any commercial or other prepared typing instruction materials which would fit the course goals and objectives as defined by the business faculty.

The use of the ERIC THESAURUS and the WESTINGHOUSE LEARNING DIRECTORY, combined with campus visitations, narrowed the search to two individualized typing programs. These programs were the AVT program, published by Media Systems Corporation, a subsidiary of Harcourt Brace Jovanovich, Inc., and the Gregg IPM program, published by McGraw-Hill Book Company.

The programs were obtained from the publishers for preview by the business faculty and a standardized form was used to ensure uniform evaluation of the materials.

The final selection of the Gregg IPM materials was based upon the decision that they would be the most effective in meeting the course goals and objectives. Other considerations of the Gregg IPM program included school and student costs, and the technical quality of the instructional materials. (The course outline for the Gregg IPM program is included in Appendix C.)

The Gregg IPM typing program provided three quarters of individualized instruction--beginning, intermediate, and advanced. The basic medium of instruction was the audio-visual presentation, in which the fundamental information for the lesson was offered. The instructional materials also included a textbook, programmed instruction learning guides, proofguides, and a progress folder for each student.

A student syllabus listing the course goals and objectives, attendance and grading procedures, and student responsibilities was prepared for each course by the author. (Appendix D)

Selection of Equipment

Planning for the necessary instrumentation for the instructional system was based on the requirements of the Gregg IPM typing program. This instructional system required an individual study carrel equipped with ample work area for typing and study; synchronized cassette tape player; 35 mm slide projector; and a rear screen projection system. It was determined, by the author and the Gregg Sales representative, that five equipped student study carrels would be sufficient for the planned typing enrollment at Napa College.

The use of the AUDIO-VISUAL EQUIPMENT DIRECTORY and campus and equipment dealer visitations, narrowed the carrel selection to two models; the Media Systems LRC series, and the Synsor Corporation LEM model. The final selection of the LEM carrel was based upon space requirements, and local sales and service representation. Selection of the remaining

audio-visual equipment was based on the specifications of the Gregg IPM program and the LEM carrels. The carrels, audio-visual equipment, and storage units were acquired and installed by the author during the summer, 1975.

Selection of Instructional Staff

The operation of the individualized typing program required the planned teamwork of (1) the student, responsible for making a full effort for progress achievement; (2) the student aide, responsible for the clerical maintenance of student records, equipment, and instructional materials; (3) the instructional assistant, responsible for maintaining the learning environment; and (4) the instructor, responsible for supervising and directing the total effort of all to ensure learner progress.

Campus visitations, the Gregg INSTRUCTOR'S MANAGEMENT MANUAL, and a review of related research indicated that an instructor, an instructional assistant (paraprofessional), and a student aide should be available at all hours of lab operation. It was determined by the business faculty and the administration that, in addition to the author, one full-time instructional assistant and one student aide per hour would be required for the planned typing enrollment.

The duties and responsibilities of the instructional staff for the individualized typing program were developed. Job descriptions for each were prepared and the selection and hiring process followed during the summer, 1975. (See

Appendix E for the duties, responsibilities, and job descriptions of the instructional staff.)

II. IMPLEMENTATION PROCESS

Facilities

The individualized typing program began in the fall quarter, 1975, with one hundred students enrolled. The program was housed in a 900 square foot room in the business building and had 29 learning stations, including five carrels with audio-visual equipment and 24 L-shaped practice stations. The practice stations were grouped in clusters of four and each was equipped with an electric typewriter and a calculating machine to offer more flexibility in equipment usage. Two clerical classes, ten-key machines and machine transcription, were also scheduled to increase the use of the lab facilities.

The typing program provided the student with flexible individualized scheduling. Students could attend class at times suitable to them during established lab hours as long as they were in attendance 250 minutes per week. The lab was open from 8:00 a.m. to 3:00 p.m. Monday through Friday.

Because of the open nature of the lab, use of the instructional materials, facilities, and time spent by the students was carefully monitored. This information was tabulated from the student progress folders, check-out lists, and student questionnaires.

Instructional Procedures

During the first week of the quarter each student was given a placement test that covered the material to be presented.

After the placement test was scored, the student and the instructor discussed the student's performance. The student's level of success on the placement test determined placement in the appropriate course and the specific lessons in the typing program that the student would complete. Lessons pertaining to those areas in which the student displayed a strong knowledge or ability were omitted.

Each lesson began with lesson objectives which described desirable and measurable skills, attitudes, or knowledge that the student would be able to demonstrate upon completion of the learning activities.

The learning activities within each lesson were directed toward the appropriate performance objectives and offered a variety of instructional approaches to the content of the lesson. The instruction was then presented by means of prepared instructional materials delivered by an auto-tutorial approach, printed material, and the individual assistance of an instructor. Each student was able to proceed at the rate of his capabilities and/or other time commitments. At the conclusion of each lesson the student took a performance test in order to determine the degree of his or her success in achieving the stated lesson objectives. If the student passed the test, doing so was evidence of readiness for the next lesson. If the student failed to achieve the lesson objective, extra practice on similar material was assigned before repeating the performance check. Students were able to review or repeat any lesson as often as they wished to do so.

At the end of each lesson the student was asked to prepare for the next lesson. This assignment included a programmed instruction lesson known as a "learning guide." Each learning guide concerned a technical aspect of typing, such as names of machine parts, rules for word division, or styles of letters. Students were directed to complete the appropriate learning guide as preparation for the next lesson.

The last component of the learning package was the progress test, designed to evaluate formally the student's achievement of all course objectives. After the completed test was scored, the student and the instructor discussed the student's performance. The student who had earned a passing grade (65% or better) could continue on to the next level of the typing program. The student who scored below 65 percent reworked those lessons that caused difficulty and retook the progress test.

III. EVALUATION PROCESS

Formative and summative procedures were used to obtain data to aid in the evaluation of the individualized typing program.

Formative Evaluation

During the fall quarter, the evaluation procedures called for data from students and the instructional staff about possible modification or revision of the typing program. (See Appendix F for the student questionnaire.)

Summative Evaluation

A summative evaluation, the program's success in reaching its goals, was conducted after one quarter of operation. Similar summative evaluations will continue to be made after each year of operation of the program. The summative evaluation included a cost analysis study and a student outcome evaluation.

Cost Analysis

The cost analysis study was conducted to compare the cost per student of the two instructional typing programs (traditional and individualized). In order to measure the cost relationship between the instructional programs, the actual costs of each program and the number of students enrolled in each were recorded.

For this study, it was assumed that the material would be taught in one format or another, therefore, the objective was to determine which instructional approach offered the lowest cost per student. In developing the cost model, the following definitions and assumptions were used:

1. Cost per student was defined as the costs of the instructional program divided by the number of students enrolled. (See page 50 for the items included in the determination of this cost.)

2. Fixed costs, such as lights, standard maintenance, and administration were not included in the determination of costs under the assumption that both programs operated at capacity.

3. Certain equipment costs common to both programs such as typewriters, equipment replacement, tables, and chairs were not included in the determination of costs.

4. The audio-visual equipment and prepared instructional materials were assumed to have an estimated life of five years. It was also assumed that repairs and maintenance for the audio-visual equipment would cost one cent per unit per hour of operation.

5. It was assumed that the instructor salary was equal for both programs. Each typing program represented one-third of a full-time teaching load and was assigned one-third of the salary cost.

6. The number of students enrolled in the individualized typing program represented 67 percent of the students enrolled in the business lab. Therefore, 67 percent of the costs of the instructional assistant and the student aide were assigned to that program.

7. Student enrollment was based on the actual enrollment for fall quarter, 1975.

Student Outcome Evaluation

The student outcome evaluation, which measured the results or outcomes of the program, was measured by (1) comparing the terminal typing achievement of an experimental group with a control group, and (2) comparing the withdrawal rate of students in the experimental typing group with the withdrawal rate of students in the control group.

General Procedures. The experiment was conducted at Napa College during the fall quarter, 1975, and was limited to those students who were enrolled in beginning typewriting and who had no previous formal typewriting instruction.

Two business classrooms were scheduled for this experimental study. Each classroom had a capacity of forty students and was equipped with electric typewriters. One classroom was used by the control group and one was used by the experimental group.

The experimental group experienced no group teaching by the instructor during the quarter. All instruction was presented by prepared instructional materials delivered by an audio-visual approach, printed matter, and individual help from the instructor or instructional assistant.

The control class was taught by an instructor in a manner consistent with commonly accepted typewriting instructional patterns. Lessons were presented directly to the class by an instructor using a lecture approach.

The course materials, TYPING 75 BASIC, published by Gregg Division, McGraw-Hill Book Company, were used by students in both the control and experimental groups. These student materials consisted of a textbook, workguide, and a proofguide.

For both groups, the quarter course was divided into eight units as follows: (1) Keyboard Control, (2) Keyboard Control, (3) Skill Drive, (4) Number Key Control, (5) Skill Drive, (6) Correspondence, (7) Tabulations, and (8) Manuscripts.

Procedures for Sample Selection. The following procedures were used to select the treatment groups for the study.

A. Universe. The universe from which the two samples were drawn was defined as all students registering for Business 86, Beginning Typewriting, for the fall quarter, of the 1975-76 academic year at Napa College and who were in attendance during the first two class periods.

B. Populations. The universe from which the samples were drawn was stratified into two populations: (1) students with no previous formal typewriting instruction who

elected to enroll in the traditional teacher-directed program, and (2) students with no previous formal typewriting instruction who elected to enroll in the individualized instruction program.

C. Sample Selection. During the class period on the first two days of the quarter, all students were required to complete a form on which they gave their names and the amount of previous formal typewriting instruction. A table of random numbers was then used to select the sample of equal numbers of students who had no previous formal typewriting instruction for each group. The control group and the experimental group each contained thirty students.

Testing Instruments. The pretest and the posttest administered to the students to determine their initial and terminal skill performance was a standardized test published by Gregg Division, McGraw-Hill Book Company. The tests were coordinated with the student materials used in the control and experimental groups and were designed to provide a fair and comprehensive measure of typewriting achievement.

The posttest was composed of the following three sections: (1) General Information; an objective evaluation that covered the technical information presented during the quarter. It included such areas as terminology, spacing, word division, uses of symbols, and names of the parts of letters, tables, or reports. (2) Timed Writing; an evaluation of the typing speed and accuracy on straight-copy paragraph material for

five minutes. (3) Production; a thirty-minute evaluation of the typing skill and accuracy on production material covered during the quarter, such as centering, tables, and business letters. The pretest was of the same format as the posttest. (See Appendix G for the pretest and posttest.)

Statistical Methods. Hypotheses investigated and statistical procedures used in this study included the following:

1. The Student's t distribution for small size sample techniques was used to test for any significant (.05 level) mean difference between the two treatment groups for the following null hypothesis:

> There is no significant difference between the mean test scores of the control group and the experimental group as measured by the pretest.

2. The Student's t distribution was used to test for any significant (.05 level) mean difference between the two treatment groups for the following null hypotheses:

A. There is no significant difference between the control group and the experimental group in the mean straight-copy speed score as measured by the posttest.

B. There is no significant difference between the control group and the experimental group in the mean straight-copy accuracy rate as measured by the posttest.

3. A chi-square test of independence was used to test for any significant (.05 level) difference between the two treatment groups for the following null hypothesis:

> There is no significant difference between the control group and the experimental group in the mean withdrawal rate.

CHAPTER IV

FINDINGS

The findings of this study are divided into the following five sections:

1. The initial performance of the two treatment groups.
2. The analysis of the terminal typewriting achievement of the two treatment groups.
3. The analysis of the withdrawal rate of the two treatment groups.
4. The cost analysis of the two treatment groups.
5. The formative evaluation findings.

I. INITIAL PERFORMANCE OF THE TREATMENT GROUPS

The two sample groups were selected at the beginning of this study from all students enrolled in beginning typewriting and who had no previous formal typewriting instruction.

The Student's t distribution for small size sample techniques was used to determine if there were any significant (.05 level) initial performance differences between the two treatment groups as evidenced by the pretest.

Table I, on page 41, shows the results of the test for the significance of difference for pretest scores. The critical t-value was $t > 2.002$ or < -2.002 at the .05 level of significance with 58 degrees of freedom. Since the computed

t-value of .57 is not greater than the critical value, the null hypothesis cannot be rejected; there is no significant difference between the mean test scores of the control group and the experimental group as measured by the pretest.

TABLE I

COMPARISON OF PRETEST SCORES BY GROUP

Group	Group Mean	Standard Deviation	Sample Size
Control	14.80	5.15	30
Experimental	14.00	5.73	30

Level of Significance: .05

Degrees of Freedom: 58

Critical t-value: $t > 2.002$ or < -2.002*

Computed t-value: .57

Table II, on page 42, displays the frequency distribution of pretest scores for the two treatment groups.

*The value of t for 58 degrees of freedom was obtained using linear interpolation from a table with entries for 40 and 60 degrees of freedom.

TABLE II

FREQUENCY DISTRIBUTION OF PRETEST SCORES

Control Group		Experimental Group	
Class	Frequency	Class	Frequency
23-25	2	23-25	0
20-22	4	20-22	5
17-19	5	17-19	10
14-16	6	14-16	1
11-13	8	11-13	3
8-10	2	8-10	5
5- 7	2	5- 7	4
2- 4	1	2- 4	2
Total	30	Total	30

II. TERMINAL ACHIEVEMENT OF THE TREATMENT GROUPS

The Student's t distribution was used to determine if there were any significant (.05 level) differences in the terminal typewriting achievement between the two treatment groups as measured by the posttest.

Only those students who completed both the pretest and posttest were included in the terminal typewriting achievement analysis. Although the two sample groups were the same size initially (thirty students each), seventeen students withdrew from the course during the quarter. The

final sample size was eighteen students in the control group and twenty-five students in the experimental group. (See Appendix H for the individual student data.)

Table III contains the results of the test for significance of difference for the mean speed achievement on the five-minute straight-copy timed writing test. The control group typed at the rate of 27.72 gross words per minute and the experimental group typed at the rate of 30.96 words per minute. The critical t-value was $t > 2.020$ or < -2.020 at the .05 level of significance with 41 degrees of freedom. Since the computed t-value of 1.15 is not greater than the critical value, the null hypothesis cannot be rejected; there is no significant difference between the control group and the experimental group in the mean straight-copy speed score as measured by the posttest.

TABLE III

TEST RESULTS OF SPEED ACHIEVEMENT AS MEASURED BY POSTTEST

Group	Group Mean	Standard Deviation	Sample Size
Control	27.72	8.11	18
Experimental	30.96	10.27	25

Level of Significance: .05

Degrees of Freedom: 41

Critical t-value: $t > 2.020$ or < -2.020

Computed t-value: 1.15

Table IV displays the frequency distribution of posttest speed scores for the two treatment groups.

TABLE IV

FREQUENCY DISTRIBUTION OF POSTTEST SPEED SCORES

Control Group		Experimental Group	
Class	Frequency	Class	Frequency
44-47	0	44-47	2
40-43	1	40-43	6
36-39	4	36-39	2
32-35	1	32-35	4
28-31	3	28-31	1
24-27	4	24-27	1
20-23	1	20-23	5
16-19	4	16-19	3
12-15	0	12-15	1
Total	18	Total	25

Table V, on page 45, displays the results of the test for significance of difference for the mean accuracy rate on the five-minute straight-copy timed writing test. The control group typed with 7.89 errors and the experimental group typed with 6.44 errors. The critical t-value was $t > 2.020$ or < -2.020 at the .05 level of significance with 41 degrees of freedom. Since the computed t-value of 1.18

is not greater than the critical value, the null hypothesis cannot be rejected; there is no significant difference between the control group and the experimental group in the mean straight-copy accuracy rate as measured by the posttest.

TABLE V

TEST RESULTS OF ACCURACY ACHIEVEMENT AS MEASURED BY POSTTEST

Group	Group Mean	Standard Deviation	Sample Size
Control	7.89	3.20	18
Experimental	6.44	4.87	25

Level of Significance: .05

Degrees of Freedom: 41

Critical t-value: $t > 2.020$ or < -2.020*

Computed t-value: 1.18

Table VI, on page 46, displays the frequency distribution of posttest accuracy scores for the two treatment groups.

*The value of t for 41 degrees of freedom was obtained using linear interpolation from a table with entries for 40 and 60 degrees of freedom.

TABLE VI

FREQUENCY DISTRIBUTION OF
POSTTEST ACCURACY SCORES

Control Group		Experimental Group	
Class	Frequency	Class	Frequency
21-23	0	21-23	1
18-20	0	18-20	0
15-17	1	15-17	2
12-14	0	12-14	0
9-11	5	9-11	0
6- 8	10	6- 8	10
3- 5	1	3- 5	8
0- 2	1	0- 2	4
Total	18	Total	25

III. WITHDRAWAL RATE OF THE TREATMENT GROUPS

The chi-square distribution was used to determine if there were any significant differences in the withdrawal rate between the two treatment groups.

A table illustrating the observed student withdrawal data of the control and experimental groups is included as Table VII on page 47.

TABLE VII

OBSERVED STUDENT WITHDRAWAL OF
THE CONTROL AND EXPERIMENTAL GROUPS

Group	Withdrew	Persisted	Totals
Control	12	18	30
Experimental	5	25	30
Totals	17	43	60

A table illustrating expected student withdrawal data of the control and experimental groups is included as Table VIII below.

TABLE VIII

EXPECTED STUDENT WITHDRAWAL OF
THE CONTROL AND EXPERIMENTAL GROUPS

Group	Withdraw	Persist	Totals
Control	8.5	21.5	30
Experimental	8.5	21.5	30
Totals	17.0	43.0	60

Table IX shows the calculation of chi-square for the withdrawal rate of the two treatment groups. The critical value of X^2 was 3.84 at the .05 level of significance with one degree of freedom. Since the computed X^2 value of 4.02 exceeds the critical value, the null hypothesis was rejected; the withdrawal rate of the control group was significantly higher than the withdrawal rate of the experimental group.

TABLE IX

CALCULATION OF CHI-SQUARE FOR THE WITHDRAWAL RATE OF THE STUDENTS IN THE CONTROL AND EXPERIMENTAL GROUPS

o	e	o - e	$(o - e)^2$	$\frac{(o - e)^2}{e}$
12	8.5	3.5	12.25	1.44
18	21.5	-3.5	12.25	.570
5	8.5	-3.5	12.25	1.44
25	21.5	3.5	12.25	.570
60	60.0	0		4.02

Level of Significance: .05

Degrees of Freedom: 1

Critical chi-square value: $X^2 > 3.84$

Computed chi-square value: $X^2 > 4.02$

IV. COST ANALYSIS OF THE TREATMENT GROUPS

Direct instructional costs and student enrollment for the two instructional typing programs were recorded and are shown in Table X, page 50.

The costs for the equipment, instructional materials, and instructional staff were higher in the individualized typing program when compared with the traditional program. However, the individualized program increased the number of typing course offerings from one per quarter to three per quarter and increased the student enrollment from 40 students to 100 students per quarter. The individualized typing program also provided an increased use of facilities and equipment by offering classes for seven hours a day compared to one hour per day in the traditional program.

A comparison of instructional costs indicates that the cost per student in the individualized, experimental group was lower ($38.67) than the cost per student in the traditional, teacher-directed control group ($42.36).

V. FORMATIVE EVALUATION FINDINGS

During the study, formative evaluation procedures were used to collect data to assist in making decisions about possible modifications or revisions of the individualized typing program.

Table XI, on page 51, displays the results of a survey of 65 students who were enrolled in the individualized typing program during the fall quarter, 1975.

TABLE X

INSTRUCTIONAL COSTS OF THE TWO TYPING PROGRAMS

Cost Area*	Control Group	Experimental Group
Equipment		
Initial Cost of Equipment	---	(6,000.00)**
Cost Per Quarter (Amortized for five years of operation)	---	400.00
Maintenance Cost Per Quarter	---	21.00
Equipment Cost Per Quarter	---	421.00
Instructional Materials		
Initial Cost of Materials	(400.00)**	(4,000.00)**
Cost Per Quarter (Amortized for five years of operation)	26.67	266.67
Materials Cost Per Quarter	26.67	266.67
Instructional Staff		
Instructor	1,667.67	1,667.67
Instructional Assistant	---	1,388.02
Student Aide	---	123.82
Instructional Staff Cost Per Quarter	1,667.67	3,179.51
Total Cost Per Quarter	1,694.34	3,867.18
Student Enrollment Per Quarter	40	100
Cost Per Student Per Quarter	42.36	38.67

*For explanation of cost areas see the definitions and assumptions listed on page 35.

**Total initial costs are not included in per quarter or per student calculations.

TABLE XI

STUDENT SURVEY RESULTS OF THE INDIVIDUALIZED TYPING PROGRAM

Question	Student Response Yes	No	Percent Yes
Are there sufficient instructional staff members available to assist you?	64	1	98
Are the instructional staff members knowledgeable about the course content?	65	0	100
Are the instructional staff members willing and able to provide individual assistance when needed?	65	0	100
Are there sufficient practice stations available for your use?	62	3	95
Are there a sufficient number of carrels available for your use?	49	16	75
Are there a sufficient number of business machines and typewriters available for your use?	63	2	97
Are the goals for each lesson clearly stated?	64	1	98
Do you get immediate feedback on how well you performed a lesson?	64	1	98
Is the content of each lesson clear and meaningful?	62	3	95
Do you find the lessons interesting and challenging?	62	3	95
Do you understand how you will be graded during the quarter?	60	5	92
Do the progress tests accurately measure your performance of the subject matter?	65	0	100
Do you feel that the lab allows you to move at your own pace?	63	2	97
Do you feel there was sufficient orientation to the operation of the lab at the start of the quarter?	65	0	100

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

I. SUMMARY

The purpose of this study was to develop, implement, and evaluate an individualized instruction typing program at Napa College.

The first step in the study was to design and develop a method of teaching first-year typewriting to a large group of students using individualized and multi-media techniques. This work was completed by the author during the period from January, 1975 to August, 1975.

The individualized typing program was put into operation during the fall quarter of the 1975-76 school year. During this period the program was revised and refined prior to testing.

The evaluation procedures called for a comparison of instructional costs, withdrawal rate, and student outcomes between the traditional, teacher-directed teaching method (control group) and the individualized instruction teaching method (experimental group).

The control and experimental groups were each comprised of thirty randomly selected students drawn from two stratified populations.

The experimental group experienced no group teaching by the instructor during the quarter. All instruction was presented by prepared instructional materials delivered by an audio-visual approach, printed matter, and individual help from the instructor or instructional assistant. The experimental students followed an individual progress plan through a series of 50 lessons. Each lesson contained a performance objective that had to be met before the student could progress to the next lesson.

The control group was taught by an instructor in a manner consistent with commonly accepted typewriting instructional methods. Lessons were presented directly to the class by the instructor using a lecture approach. Both groups used the same text materials.

A pretest was given to determine the effectiveness of the randomization of the sample groups. This test confirmed the assumption that there was no significant difference in the initial typewriting performance of the two treatment groups.

Instructional Costs

A comparison of instructional costs indicated that the cost per student in the individualized, experimental group was lower ($38.67) than the cost per student in the traditional, teacher-directed control group (42.36).

Student Achievement

A standardized typewriting ability test was administered at the end of the experiment to all participating students in order to determine the terminal achievement of each student.

The findings showed that the two instructional approaches did not produce any significant differences in the terminal typewriting achievement of the students after one quarter of beginning collegiate typewriting instruction.

Withdrawal Rate

The chi-square distribution did show that the student withdrawal rate of the control group was significantly higher than the withdrawal rate of the experimental group.

II. CONCLUSIONS

The following conclusions regarding the major research issues of this study are made on the basis of the study findings:

1. It is concluded that an effective multi-media individualized instruction typing program will have these characteristics:
    - A. Lesson and course goals and objectives stated in specific and measurable terms.
    - B. Flexible scheduling and the opportunity for the student to progress at his own pace.
    - C. Specified learning activities of sufficient variety to be both interesting and challenging.

D. Immediate feedback on lesson performance and criterion-referenced testing activities to measure student achievement.

E. Consistent instructor contact with the student (for instruction, observation, assistance and evaluation) throughout the course.

F. Sufficient instructional staff to provide (1) clerical maintenance of student records, equipment, and instructional materials; (2) motivation and instructional assistance for the student; and (3) supervision and direction of the total effort of all to ensure learner progress.

G. Inservice training for the instructional staff on the philosophy of individualized instruction and on the proper use of instructional materials and equipment prior to implementation of the program.

H. Compatible equipment and instructional materials in sufficient amounts to handle the planned student enrollment.

I. Detailed records on student progress, attendance, and equipment utilization.

J. Instructor prepared student handbooks containing an orientation to the program, course outline, goals and objectives, attendance procedures, and evaluation procedures.

2. It is concluded that prepared instructional materials and audio-visual equipment are available for an individualized instruction typing program.

The research produced two complete individualized typing programs, utilizing multi-media instructional materials, available for community college use. While both programs are available and in use in several California community colleges, individual modifications are necessary to tailor the system to each campus.

The necessary audio-visual equipment needed for the operation of either program is available from a variety of regional dealers.

3. It is concluded that the individualized instruction typing program makes more efficient use of staff, classroom space, and business equipment than does the traditional teacher-directed group program.

The study findings show that:

A. The individualized instructional approach provided a lower cost per student than the traditional teacher-directed program.

B. The individualized instruction approach provided a significant increase in the number of sections of typewriting offered and a corresponding increase in student enrollment.

4. It is concluded that the individualized instruction program is as effective as the traditional teacher-directed program in developing the terminal typewriting achievement of students enrolled in beginning collegiate typewriting.

   The study findings indicate that:

   A. There is no significant difference between the control group and the experimental group in the mean straight-copy speed score as measured by the posttest. The individualized typing program is as effective as teacher-directed group instruction in developing speed in beginning collegiate typewriting.

   B. There is no significant difference between the control group and the experimental group in the mean straight-copy accuracy score as measured by the posttest. The individualized typing program is as effective as teacher-directed group instruction in developing accuracy in beginning collegiate typewriting.

5. It is concluded that the individualized instruction typing program significantly affects the withdrawal rate of students enrolled in beginning collegiate typewriting.

   The study findings show that the student withdrawal rate is significantly lower under the individualized teacher method than the traditional teaching method.

III. RECOMMENDATIONS

Based upon the findings and observations made by the researcher in this study, the following recommendations should be considered:

1. It is recommended that teaching first-year typewriting by means of the individualized instructional approach be continued at Napa College for the following reasons:
   - A. Students perform as effectively in straight-copy speed and accuracy under this method as the traditional method.
   - B. Student cost per quarter is less under the individualized teaching method than the traditional method.
   - C. The student withdrawal rate is lower under the individualized teaching method than the traditional teaching method.
   - D. The individualized instruction approach provides more efficient utilization of staff, classroom space, and business equipment than the traditional approach.
   - E. The individualized approach provides greater scheduling flexibility and increased course offerings for the student than does the traditional teaching method.
   - F. Students can progress through the program at their own rate under the individualized program.

2. It is recommended that second-year typewriting be taught at Napa College under the individualized instruction approach beginning September, 1976.
3. It is recommended that both the traditional group method of instruction and the individualized progress method of instruction be offered in the Napa College day and extended day typewriting schedule. This will better utilize the current typewriting facilities more efficiently and accomodate the varying learning needs of individual students.
4. It is recommended that a complete evaluation of the Napa College individualized typing program be made after one complete year of operation. This evaluation should include the following:
    A. Student achievement measures, including straight-copy speed and accuracy, subject matter knowledge, and production speed and accuracy.
    B. Student withdrawal, attrition, and persistence rates.
    C. Amount of time spent per student completing the typewriting program.
    D. Student attitudes toward and preferences for different instructional approaches.
    E. Relationship between personality types and achievement as a function of the two methods of instruction.

5. It is recommended that individualized instructional techniques for other office skill courses, in the Napa College business curriculum, be considered for future study.
6. It is recommended that further research be conducted to compare instructional costs of collegiate typewriting when instructed under different teaching methods. Variables such as student enrollment, faculty load, size of instructional staff, and amount of equipment should be considered in such a study in an attempt to determine an optimum cost arrangement.
7. It is recommended that at least one year by allowed for the design process of an individualized instruction typing program. Some of the areas that should be considered include: funding; administrative and board approval; faculty and student support; facilities; instructional staff; course content, goals and objectives; selection, acquisition, and production of instructional materials; selection, acquisition, and installation of audio-visual equipment; distribution and maintenance of instructional materials and equipment; and program evaluation procedures.

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APPENDIX A

PROPOSAL COVER LETTER

TO: Dr. George Clark

FROM: Arlin Taylor

DATE: February 3, 1975

SUBJECT: Grant Application Under Title VI-A of the Higher Education Act of 1965

BACKGROUND:

Napa College has offered shorthand and typing classes in the traditional group-lecture instructional method. This instructional approach restricts the number of students who can enroll each quarter, offers little scheduling flexibility, and, most important, does not take into account individual differences in student learning rates.

CURRENT STATUS:

Five typing and five shorthand classes of varying skill levels are currently offered each year. Individual course offerings are normally limited to one quarter per year with an enrollment maximum of 40 students per class. The 1974-75 day schedule contains 12 typing and shorthand offerings with an estimated enrollment of 400 students.

RECOMMENDATIONS:

This project proposes the establishment of an audio-visual tutorial center to provide individualized instruction at all skill levels for typing and shorthand students. Because the proposed learning center could be open most of the school day, an increased number of typing and shorthand classes could be offered per quarter with a corresponding increase in student enrollment. The tentative 1975-76 day schedule contains 23 typing and shorthand offerings with an estimated enrollment of 600 students.

Advanced specialized typing and shorthand courses not previously offered because of limited scheduling flexibility may now be offered using the individualized instructional approach. Future courses could include court reporting, medical and legal typewriting, medical and legal shorthand, and medical and legal transcription.

Recommended funding for the total project budget of $19,201 would include a federal grant of $9,601 under Title VI-A of the Higher Education Act of 1965 and $9,061 provided by Napa College.

swd

APPENDIX B

FUNDING APPROVAL LETTER

STATE OF CALIFORNIA EDMUND G. BROWN JR., Governo

CALIFORNIA POSTSECONDARY EDUCATION COMMISSION
1020 TWELFTH STREET
SACRAMENTO, CALIFORNIA 95814

April 14, 1975

Commission Control
No. VI-A 080-I
Total Project: $19,202
Recommended Grant: $ 9,601

Mr. George R. Hagen
Napa College
2277 Napa-Vallejo Highway
Napa, California 94558

Dear Mr. Hagen:

It is my pleasure to inform you that on April 14, 1975, the California Postsecondary Education Commission, acting as the State Commission for the administration of Title VI-A of the Higher Education Act of 1965, recommended your application for a grant under Category I to the U.S. Commissioner of Education. The amount of the recommended grant is shown above and a copy of the report presented to the Commission for recommendation to the U.S. Commissioner is enclosed for your information.

Since the Commissioner has the ultimate authority to award grants, the U.S. Office of Education must conclude a grant agreement with you no later than June 30, 1975. Please contact us if a grant agreement is not received for your signature by June 15, 1975, so that arrangements can be made to insure grant approval prior to the end of the fiscal year.

Also enclosed for your information is a list of the equipment items and costs contained in your original application and subsequently deleted by the Commission staff as items ineligible under either the Act or the Regulations and Instructions of the Commissioner.

We appreciate your interest in this program and the cooperation you and your staff have given us. If you have any questions regarding your application or if we may be of further assistance to you, please do not hesitate to call me.

Sincerely,

Russell L. Riese

Russell L. Riese
Federal Programs

cc Dr. George W. Clark
President

APPENDIX C

GREGG IPM COURSE OUTLINE

GREGG IPM COURSE OUTLINE

Unit 1: Keyboard Control

Unit 2: Keyboard Control

Unit 3: Skill Drive

Unit 4: Number Key Control

Unit 5: Skill Drive

Unit 6: Correspondence

Unit 7: Tabulations

Unit 8: Manuscripts

Unit 9: Skill Drive

Unit 10: Correspondence

Unit 11: Business Forms

Unit 12: Manuscripts

Unit 13: Skill Drive

Unit 14: Correspondence

Unit 15: Tabulations

Unit 16: Manuscripts

Unit 17: Skill Drive

Unit 18: Correspondence

Unit 19: Business Form

Unit 20: Manuscripts

Unit 21: Skill Drive

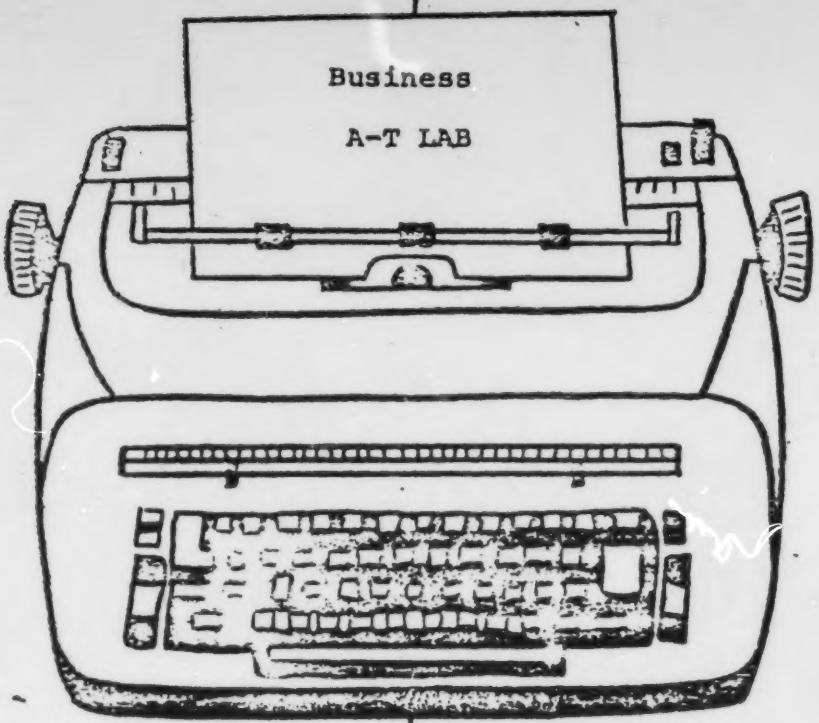
Unit 22: Correspondence

Unit 23: Tabulations

Unit 24: Manuscripts

APPENDIX D

STUDENT HANDBOOK



Beginning Typewriting

LEARNING ACTIVITY PACKAGE

GEORGE HAGEN

NAPA COLLEGE

PREFACE

The information in this guide will introduce you to the Napa College Business A-T LAB.

This typing program is designed specifically for you based upon your own goals (personal or career oriented) and prior typewriting background. You will be able to progress at the rate of your capabilities and/or other time commitments.

You are strongly encouraged to read the entire guide before starting your learning in the LAB. You will also want to keep this guide with you at all times while you are working in the LAB, as you will refer to it often for procedures and instructions.

COURSE DESCRIPTION

A beginner's course for students who have not had previous training in typewriting or who need a complete keyboard review. Correct posture, mastery of the keyboard, centering, erasing techniques, basic letter styles, introduction to tables, and initial experience with forms are taught.

REQUIRED STUDENT MATERIALS

Typing 75 Basic, 3rd Edition, by Lloyd, Rowe, and Winger.

Typing paper (rough) for practice and drill work. Typing paper (bond) for production work. Typewriting eraser.

PURPOSE

The ability to type is more important today than ever before. Typewritten material is neater, more legible, and done much faster than handwritten work. The typewriter is a common machine in many homes and, of course, no business office could operate effectively without one. Students at all levels find it convenient to type their assignments and college students find the ability to type indispensable to their success. An employer probably would not consider ar applicant for an office job who did not have considerable typing skill and even positions that have little connection with usual office procedures may require an occasional typewritten message or form.

GOALS

Develop a basic typewriting skill at a level that will be acceptable for personal and minimum vocational use.

Acquire the knowledge necessary to apply the skill to the typing of many materials for personal use, school use, and business use.

OBJECTIVES

Upon completion of the course, you will be able to satisfactorily accomplish the following:

1. Touch Typing. Keeping your eyes on whatever you are copying, you can operate all keys (including symbol keys) by touch and use the tabulator mechanism and the carriage return by touch.

2. Machine Adjustments. You can correctly set and reset the paper guide, margin stops, tabulator stops, and vertical linespacing. You can use the carriage release to position the carriage.

3. Checking. You can proofread your typed work against a key, mark and count errors, and compute speed on work that is timed.

4. Centering. You can center typed material both vertically and horizontally.

5. Subject matter. You can answer correctly at least 90 percent of the questions on an objective test covering the technical information presented during the quarter (word division, uses of symbols, names of parts of letters, tables, and spacing).

6. Production. Using machine controls properly and arranging for appropriate display, spacing, and positioning. You can execute the following production jobs from facsimile copy: (a) memorandum, (b) a three-column table with title, and (c) a modified block business letter.

7. Skill Rate. You can copy paragraph material line for line at a speed of not less than 15 words a minute for 5 minutes, with 4 or fewer errors.

ATTENDANCE

LAB Hours

The Business A-T LAB provides for flexible, individualized scheduling as there are no regularly scheduled classes. The LAB will operate on a "by arrangement" basis. You may attend class at a time suitable to you during lab hours, as long as you are in attendance five hours a week. Typing will be taught under this plan from 8:00 a.m. to 3:00 p.m., Monday through Friday, during the year.

Attendance Procedures

In order to complete three units of credit within one quarter, you should be progressing at the rate of a minimum of five lessons a week. Regular attendance is required of all students enrolled in the A-T LAB program. You are automatically dropped from the course if you miss more than ten hours during the quarter, unless special arrangements have been made with the instructor.

GRADING PROCEDURES

Your typing activities are designed to help you meet your objectives. Thus your grading will be based on how well you meet your objectives.

Your course grade will be composed of daily work and two progress tests.

Daily work: Lessons 1-50, along with the extra assigned practice and learning guides, must be completed and approved by the instructor.

Progress tests: You will take a progress test at lesson 25 and lesson 50. The progress tests will be composed of the following three sections:

I. General Information: An objective test that covers the technical information presented during the quarter (terminology, correct spacing, word division, uses of symbols, names of parts of letters, tables and reports). You must score at least a "B" on this section before you proceed to Section II.

II. Skill Rate: An evaluation of your typing skill and accuracy on paragraph material using the following table:

BEGINNING TYPING TIMED

WRITING SCALE

Test	Lesson	Timing Length	Error Limit	ECO Speed Required to Earn D	C	B	A
1	25	2 min.	4	10-14	15-19	20-24	25+
2	50	5 min.	4	15-19	20-24	25-29	30+

III. Production Rate: An evaluation of your typing skill and accuracy on production material covered during the quarter (centering, tables, business letters).

Credit/No-Credit Option

You may choose to take this course with a credit/no-credit option. Credit will be given if you make a grade of C or higher in the course. Students who elect the credit/no-credit option must declare their intentions during the first three weeks of the course. Students are advised to consult their counselor to determine specific provisions of this grade option. Students must file requests for credit/no-credit grades with the instructor prior to the three-week deadline.

Challenge

If you feel you can meet the objectives at this point and wish to challenge this course, see your instructor for the final examination.

If you do not wish to challenge this course, continue reading and working in this LAB.

LESSON PROCEDURES

1. Pick up your progress folder at desk.
2. Check your folder to determine where you will start today.
3. Request proper tapes and/or slides for the lesson.
4. Type your assignment using appropriate audio-visual materials. Proofread your typed material before removing from the typewriter. Use paper bail method.
5. Record your work on the progress folder.
6. Rewind tape, turn unit off, clean up when vacating the learning station.
7. Return all audio-visual materials used.
8. Adhere to the performance standards, and do the extra practice when standards are not met.
9. Return your progress folder to the bin on the desk.
10. Report any equipment malfunction to the instructor or aide.

STUDENT RESPONSIBILITIES

Each student is responsible for a full effort for achievement, so he or she is expected to:

Attendance

Develop with the instructor or aide a basic schedule of lab attendance.

Develop with the instructor or aide a supplemental schedule of attendance for extra or make-up work.

Maintain attendance according to schedule.

Lesson Routines

Obtain his or her progress folder each session and update records on it.

Request proper tapes and/or slides on basis of progress folder records.

Execute each lesson as efficiently as possible and vacate the learning carrel as soon as possible.

Adhere to the performance standards and do the extra practice when standards are not met.

Rewind tape, turn unit off, clean up when vacating the learning station.

Return to the resource center all materials borrowed for the session.

Report to instructor or aide any malfunction of the equipment.

Turn in for appraisal and approval each lesson as it is completed.

Maintain a schedule that guarantees completion of the work in the course.

Tests and Conferences

Complete satisfactorily each objective test before undertaking the matching performance test.

Notify instructor or aide when ready to take any unit or section test and do it under supervision.

Request conference with the instructor whenever progress is less than normal and undertake whatever corrective action is prescribed.

APPENDIX E

JOB DESCRIPTIONS

NAPA COLLEGE

Duties and Responsibilities of Professional Staff
for the Business A-T Lab

The operation of a successful individualized learning center requires the planned teamwork of:

1. The student, responsible for making a full effort for progress and achievement.

2. The student aide, responsible for the clerical maintenance of student records, equipment, and instructional materials.

3. The paraprofessional, responsible for maintaining the learning environment.

4. The instructor, responsible for supervising and directing the total effort of all to assure learner progress.

STUDENT AIDE RESPONSIBILITIES

Assist the student in meeting performance objectives for the course.

Assist students who have difficulty in operating equipment efficiently.

Maintain records of service, repairs and maintenance of lab equipment.

Report malfunctions of lab equipment.

Serve as librarian/custodian of the slides, tapes, and other instructional materials.

Maintain attendance records.

Maintain student progress folders.

Prepare and arrange the laboratory with attractive bulletin boards.

Assist students who have difficulty in operating equipment.

Be present at all scheduled times.

INSTRUCTIONAL ASSISTANT RESPONSIBILITIES

Aid in orienting new students to the individual progress instructional approach as offered in the Business A-T Lab.

Administer placement tests and score the work.

Assist the student in meeting performance objectives for the course.

Check student work to confirm passing or performance checks of execution of required extra practice.

Assist students who have difficulty in operating equipment efficiently.

Supervise the filing/finding of student progress folders.

Administer and score examinations.

Maintain attendance records and conduct follow-up contacts with students who have been absent.

Be present at all scheduled times.

INSTRUCTOR RESPONSIBILITIES

Interview, counsel, and place new and continuing students.

Motivate the student to full effort and sustained long-range goals.

Motivate the students to full attendance and extra practice sessions.

Assist the student in determining and meeting performance objectives of the course.

Prescribe individual student's remedial programs.

Grade examination papers and evaluate students' progress; maintain record of students' achievements and time in lab.

Assign students' grade and units earned for the course.

Assume responsibility for the operation of the laboratory.

Assemble the instructional materials most suited to the program.

Plan the staff and equipment budgets, and select appropriate instructional equipment.

Establish the daily routine and the working guidelines.

Train the paraprofessional and instructional aides in their duties and responsibilities.

Napa Community College District

STUDENT AIDE
(Business)

DEFINITION

A student instructional aide position which will provide direct support for teaching of business in the personalized system of instruction format.

EXAMPLES OF DUTIES

The student aide will assist the instructor by maintaining records of student progress, student attendance, and equipment inventory. The instructional aide will serve as a librarian/custodian of the instructional equipment and materials. He/she will also perform other tasks as assigned to help implement an audio tutorial laboratory and the personalized system of instruction format.

DESIRABLE QUALIFICATIONS

Knowledge of:
Typewriting, shorthand, office machines, and records management.

and

Ability to:
Communicate easily with students and faculty, to assemble and organize materials associated with units of instruction.

and

Education:
Completion of the first year of a college level secretarial program.

Napa Community College District

INSTRUCTIONAL ASSISTANT III
(Business)

DEFINITION

A paraprofessional position which will provide direct support for teaching of business in the personalized system of instruction format.

EXAMPLES OF DUTIES

The paraprofessional will assist the instructor by preparing materials for student use, setting up laboratory equipment in the audio tutorial format, monitoring student laboratory activities, supervising testing of the students, and other tasks as assigned to help implement an audio tutorial laboratory and the personalized system of instruction format.

DESIRABLE QUALIFICATIONS

Knowledge of:
Typewriting, shorthand, office machines, records management, and educational methodology to include audio tutorial and personalized systems techniques.

and

Ability to:
Communicate easily with students and faculty, to assemble and organize materials associated with units of instruction.

and

Experience:
Some experience in secretarial laboratory operation is desirable.

and

Education:
Bachelors degree in business education with a strong background in secretarial science.

APPENDIX F

STUDENT QUESTIONNAIRE

STUDENT QUESTIONNAIRE

Business A-T Lab--Napa College

Would you please complete this questionnaire. The information will help us to improve the lab operation.

What lab course are you enrolled in? _____

STAFF:

1. Are there sufficient instructional staff members available to assist you?
   Yes ___ No ___ Comment_____
   _____

2. Are the instructional staff members knowledgeable about the course content?
   Yes ___ No ___ Comment_____
   _____

3. Are the instructional staff members willing and able to provide individual assistance when needed?
   Yes ___ No ___ Comment_____
   _____

FACILITIES:

1. Are there sufficient practice stations available for your use?
   Yes ___ No ___ Comment_____
   _____

2. Are there a sufficient number of carrels available for your use?
   Yes ___ No ___ Comment_____
   _____

3. Are there a sufficient number of business machines and typewriters available for your use?
   Yes ___ No ___ Comment_____
   _____

INSTRUCTIONAL MATERIALS:

1. Are the goals for each lesson clearly stated?
   Yes ___ No ___ Comment_____
   _____

2. Do you get immediate feedback on how well you performed a lesson?
   Yes ___ No ___ Comment_____
   _____

3. Is the content of each lesson clear and meaningful?
   Yes ___ No ___ Comment_____
   _____

4. Do you find the lessons interesting and challenging?
   Yes ___ No ___ Comment_____
   _____

EVALUATION:

1. Do you understand how you will be graded during the quarter?
   Yes ___ No ___ Comment_____
   _____

2. Do the progress tests accurately measure your performance of the subject matter?
   Yes ___ No ___ Comment_____
   _____

LAB OPERATION:

1. Do you feel that the lab allows you to move at your own pace?
   Yes ___ No ___ Comment_____
   _____

2. Do you like the idea of flexible scheduling?
   Yes ___ No ___ Comment_____
   _____

3. Do you feel there was sufficient orientation to the operation of the lab at the start of the quarter?
   Yes ___ No ___ Comment_____
   _____

4. What problems have you had with the operation of the lab?

5. What could be done to improve the operation of the lab?

THANK YOU.

APPENDIX G

PRETEST AND POSTTEST

Lloyd, Alan C., John L. Rowe, and Fred E. Winger. 1970. Typing 75, Basic. New York: McGraw-Hill Book Company.

Reproduced with the permission of the McGraw-Hill Book Company.

Typing 75

Lloyd
Rowe
Wingor

Name:_____

Placement: Lesson 1 26 51 76 101 126 151

Examiner:_____ Date_____

Placement Test

This test tells at what point in *Typing 75* you should begin. It includes three performances, or parts. The requirement on each, to achieve advanced standing, is indicated by this table. For example, it shows that anyone wishing to start with Lesson 76 (start of the second semester) must complete Part A within 5 minutes, must answer questions 1–18 of Part B with not more than 3 errors, and must finish the table in Part C within 14 minutes.

Requirements to start at.....		Lesson 26 (Part 2)	Lesson 51 (Part 3)	Lesson 76 (Part 4)	Lesson 101 (Part 5)	Lesson 126 (Part 6)	Lesson 151 (Part 7)
A Skill	Maximum time* permitted	7 min.	6 min.	5 min.	4 min.	3 min.	2 min.
B Info.	Answer questions	1–5	1–11	1–18	1–26	1–35	1–35
	Error limit	1	2	3	4	5	3
C Table	Maximum time* permitted	.....	.....	14 min.	12 min.	10 min.	8 min.
Kit in *Typing 75* series		Basic	Basic	Advanced	Advanced	Advanced	Expert

* Including charge of 20 seconds for each error, if any.

A. TEST OF BASIC TYPING SKILL

Set machine: double-spacing, margins 20 and 85, a tab stop at 25 for paragraphing. Starting 7 lines from the top of a sheet of paper, type one exact copy of this material while the examiner times you. Don't erase. Don't strike over. Don't start over. Your score is actual time plus 20 seconds for each error, if any. The examiner will score your work.

There are three sure keys to expert typing of numbers: 12
1. Type many numbers (this is why there are so many of 26
them in the production jobs and drill groups in your text). 38
2. Force yourself always to use the right fingers (the 52
"we 23" and other basic drills are designed for this need). 64
3. Automatize the numbers in pairs for use as pegs for 76
quick control of the numeral keys (this is the objective of 88
drills like "10 and 28 and 39 and 47 and 56," in the text). 100
There is no magic formula for number control; it takes 112
plenty of drill and constant reviewing! 120 .....

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 Score

B. CONFIRMATION OF BACKGROUND INFORMATION

After each statement (or on the bottom of the paper used for Part A, if your examiner so directs), type the *letter* that indicates the answer that best completes the statement. Answer only the number of questions indicated for the lesson in the book that you qualified for in Part A. If you qualified for Lesson 76, for example, answer only Questions 1 through 18.

TO QUALIFY FOR LESSON 26, answer only Questions 1–5.

1. Center *Ralph Tolbert* by backspacing from the center (A) 13 strokes (B) 7 strokes (C) 6 strokes..... 1._____
2. Center *M E N U* by backspacing from the center (D) 7 strokes (E) 3 strokes (F) 2 strokes..... 2._____
3. Center *T H E E N D* by backspacing from the center (G) 13 strokes (H) 7 strokes (I) 6 strokes.. 3._____
4. To center 16 lines on a full sheet, begin on about (J) line 50 (K) line 25 (L) line 9..... 4._____
5. Compared to elite printing, pica printing is (M) same size (N) larger (O) smaller..... 5._____

TO QUALIFY FOR LESSON 51, also answer Questions 6–11.

6. Divide *acknowledge* best as (A) acknowl- edge (B) acknow- ledge (C) ac- knowledge..... 6.
7. Ann Kerr types for John E. Jones. References: (D) EK:Jones (E) JEJ:AKerr (F) JEJ:AK. ..... 7.
8. A business-letter salutation is followed by (G) a dash (H) a colon (I) a comma..... 8.
9. Center *Ohio* over *John Tipple* by indenting *Ohio* (J) 7 spaces (K) 4 spaces (L) 3 spaces..... 9.
10. If a table includes both one- and two-line column headings, align the headings (M) at the top (N) at the bottom (O) either top or bottom, for it doesn't matter which..... 10.
11. The indention steps in outlines are the same number of spaces as the indentions in (P) enumerations (Q) bibliographies (R) scripts..... 11.

TO QUALIFY FOR LESSON 76, also answer Questions 12–18.

12. The subject line, if used, (A) precedes salutation (B) parallels salutation (C) follows salutation..... 12.
13. The standard "large" business envelope is the (D) No. 6¾ (E) No. 10 (F) No. 18¼..... 13.
14. The date of a telegram is typed in the (G) message heading (H) message footing (I) charge box..... 14.
15. An interoffice memo always includes a (J) salutation (K) subject line (L) cc line..... 15.
16. The page number of page 6 of a manuscript is typed on (M) line 7 (N) line 13 (O) line 60..... 16.
17. Formal reports take the same line length as (P) short letters (Q) average letters (R) long letters..... 17.
18. In a footnote, et al. means (S) same book (T) and others (U) same author..... 18.

TO QUALIFY FOR LESSON 101, also answer Questions 19–26.

19. If used, paragraph indentions *in letters* are usually (A) 3 spaces (B) 5 spaces (C) 10 spaces..... 19.
20. Type the inside address of a *formal* letter (D) above the body (E) below the body..... 20.
21. In a book manuscript, indent listings (F) 5 spaces (G) 7 spaces (H) 10 spaces..... 21.
22. In a table with horizontal rules, the blank space left between the columns is (I) more than (J) less than (K) the same as would be left if the table were not ruled..... 22.
23. Vertical lines in tables are usually (L) underscores (M) colons (N) hand-drawn..... 23.
24. A table with braced headings [headings that identify two or more columns] will usually have (O) horizontal ruled lines (P) vertical ruled lines (Q) both kinds of ruled lines..... 24.
25. In magazine articles, type the author's name on (R) every page (S) first page (T) last page..... 25.
26. Type the *dateline* of a news release in (U) the heading (V) the title (W) the body..... 26.

TO QUALIFY FOR LESSONS 126 AND 151, also answer Questions 27–35.

27. An efficient letter style is the (A) indented (B) full-blocked (C) hanging-indented..... 27.
28. On an envelope, type *Confidential*, if used, (D) above the address (E) below the address..... 28.
29. Last thing typed on a letter would be (F) enclosure note (G) cc note (H) postscript..... 29.
30. On an envelope a 3-line address must be (I) single-spaced (J) double-spaced (K) triple-spaced..... 30.
31. On a bank check, leaders are typed rows of (L) periods (M) hyphens (N) colons..... 31.
32. The monthly bill to a customer is his (O) invoice (P) requisition (Q) statement..... 32.
33. The check with an attached explanatory stub is a (R) cashier's check (S) sight draft (T) voucher check..... 33.
34. Use all caps in the closing lines for (U) signer's title (V) signer's name (W) company name, if used..... 34.
35. A duplicated business report is usually (X) triple-spaced (Y) double-spaced (Z) single-spaced..... 35.

C. PRODUCTION OF A TABLE

While examiner times you, *center* table on back of paper used in Part A. Leave 6 spaces between columns. Double-space the body. Don't erase or strike over. Your score is actual time needed to produce the table plus 20 seconds for each error.

BRANCH OFFICE REVIEW

(Western Division)

Location	Manager	Budget	Actual Income
Dallas	Caspar Tye	$ 50,000	$ 53,000
Denver	Millard Thomas	27,000	24,300
Kansas City	Ruth Miller	40,000	42,000
Los Angeles	Samuel Burns	30,000	24,000
Salt Lake City	Louis Capris	28,000	27,600
Seattle	John Welsh	25,000	27,100
TOTAL	.....	$200,000	$198,000

NAME: CLASS: DATE: 95 PAGE

Correct answers —	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70
Beginner's grades	D	D	D	D	C	C	C	C	C	C	C	B	B	B	B	A	A	A	A	A	A
Reviewer's grades							D	D	D	C	C	C	C	C	B	B	B	A	A	A	A

Type all answers in column. Answers must correct both in typing fact. Do NOT erase.

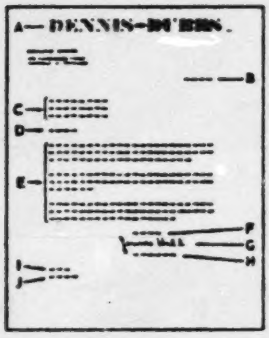
GENERAL INFORMATION TEST ON PART TWO

DIRECTIONS. *One word in each line is divided incorrectly or nonpreferentially. Select that word and type it with correct division in the answer column.*

TEST TWO
(*Lesson 50*)

00. repri- mand	out- come	readi- ness	abso- lute	.....	00. readi -ness
1. flat- tery	decis- ion	adver- tise	com- prehend	.....	1.
2. infor- mal	know- ledge	com- plex	youth- ful	.....	2.
3. refer- ring	pow- erful	insur- ance	partici- pate	.....	3.
4. posses- sive	gradu- ally	deli- cate	int- roduce	.....	4.
5. fact- ory	how- ever	modi- fier	jump- ing	.....	5.
6. bind- ers	bus- iness	re- ceipt	grati- tude	.....	6.
7. cent- ral	state- ments	smil -ing	edi- torial	.....	7.
8. punc- ture	fis- cal	illus- trate	pro- duct	.....	8.
9. awk- ward	recrea- tion	stenog- raphy	exer- cise	.....	9.
10. fract- ions	paral- lel	guaran- tee	allow- ance	.....	10.

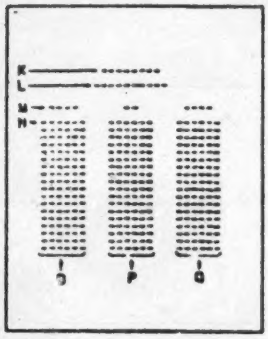
DIRECTIONS. *Answer the following questions by typing in the answer column the letter that identifies the appropriate part in the miniature illustration.*



00. Which part is the letterhead?..... 00. Part A

11. Which is the writer's typed identification?..... 11.
12. Which is the salutation?..... 12.
13. Which is the date the letter is written?..... 13.
14. Which is the enclosure reminder?..... 14.
15. Which part is the inside address?..... 15.
16. Which is the complimentary closing?..... 16.
17. Which contains the typist's initials?..... 17.
18. Which part usually ends with a colon?..... 18.
19. Which part usually ends with a comma?..... 19.
20. Which *two* parts should include ZIP numbers?..... 20.
21. Which *two* parts would not appear in a personal-business letter?..... 21.
22. Which part is moved to the bottom, to make a letter more formal?..... 22.
23. Which *two* parts are dropped in a formal business letter?..... 23.
24. Which part determines, by its length, what the margins should be?..... 24.
25. Which one part is always preceded and followed by *one* blank line?..... 25.
26. How many *blank* lines customarily separate Parts B and C?..... 26.
27. How many *blank* lines customarily separate Parts C and D?..... 27.
28. How many *blank* lines customarily separate Parts D and E?..... 28.
29. How many *blank* lines customarily separate Parts E and F?..... 29.
30. How many *blank* lines customarily separate Part F and Part H?..... 30.
31. A typewritten return address must align with which part?..... 31.
32. A tab stop at the center would be convenient for which *two* parts?..... 32.
33. What is the *name* of the letter style shown in the illustration?..... 33.
34. If a writer's name and title are both given, which is typed first?..... 34.
35. A ZIP number in an address is preceded by how many blank spaces?..... 35.

DIRECTIONS. *Answer the following questions by typing in the answer column the letter that identifies the appropriate part in the miniature illustration.*



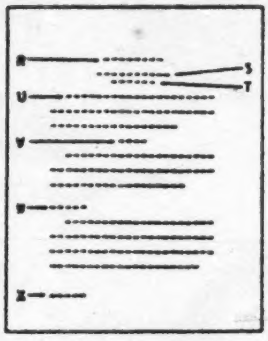
00. Which *three* parts are the columns?..... 00. Parts O, P, Q

36. Which part is most likely to be underscored?..... 36. _____
37. Which part is most likely to be in all capitals?..... 37. _____
38. Which part is the main title of the table?..... 38. _____
39. Which part is the subtitle?..... 39. _____
40. Which part includes the column heads?..... 40. _____

41. How many blank lines separate Parts K and L?..... 41. _____
42. How many blank lines separate Parts L and M?..... 42. _____
43. How many blank lines separate Parts M and N?..... 43. _____
44. How many blank spaces separate Parts O and P?..... 44. _____
45. How many blank spaces separate Parts P and Q?..... 45. _____

46. If Column O contains 20 single-spaced lines, on what line is K typed?..... 46. _____
47. If Column O contains 20 double-spaced lines, on what line is K typed?..... 47. _____
48. How many tab stops should be set for typing the body of the table?..... 48. _____
49. Would this table require any "tab stop shifting"?..... 49. _____
50. Should a two-line column head align with others at the top or bottom?..... 50. _____

DIRECTIONS. *Answer the following questions by typing in the answer column the letter that identifies the appropriate part in the miniature illustration.*



00. Which three parts comprise the main heading?..... 00. Parts R, S, T

51. Which part *must* be typed in all capitals?..... 51. _____
52. Which *two* other parts *could* be in all capitals?..... 52. _____
53. Which part bears the writer's name?..... 53. _____
54. Which part is the *principal* subheading?..... 54. _____
55. Which part is the *minor* subheading?..... 55. _____

56. Which part is most likely to be underscored?..... 56. _____
57. Which part is added just to balance the page?..... 57. _____
58. Which part is called a "sideheading"?..... 58. _____
59. Which part is called a "balance line"?..... 59. _____
60. Which part is called a "by-line"?..... 60. _____

61. How many *blank* lines customarily separate Parts R and S?..... 61. _____
62. How many *blank* lines customarily separate Parts T and U?..... 62. _____
63. How many *blank* lines customarily precede Part V?..... 63. _____
64. How many *blank* lines customarily *follow* Part V?..... 64. _____
65. How many *blank* lines customarily precede Part W?..... 65. _____

66. What spacing (single or double) is usually used for manuscripts?..... 66. _____
67. Is the illustration for a bound or unbound manuscript?..... 67. _____
68. How many spaces are manuscript paragraphs usually indented?..... 68. _____
69. What length of line, in inches, is used for a 250-word manuscript?..... 69. _____
70. Outlines are typed with how many spaces in each step of indention?..... 70. _____

Paper checked by.....

REMINDER
The General Information Test for Part Two is on Workguide pages 69-70.

LESSON 50

Progress Test on Part Two

Test 2 Tape 114B

TEST 2-A

5-Minute Writing on Paragraphs

Directions	Check
Line 60 spaces	☐
Spacing 2	☐
Tab 5 indention	☐
Paper Workguide 71	☐
Start 9 lines from top, carriage at left margin	☐
SI 1.35 — normal	☐
Time limit 5 min.	☐

So you like to hike the trail, do you, and camp in the woods and fish in the lakes and cook over open fires! Then you are one of legions who have that idea. It's been estimated that some five million families took such a "four for the price of one" vacation last summer. The national parks themselves had a total of more than thirty million campers.

One of the things that surprise us all over again each year is the variety of shelters that vacation campers bring with them, ranging from a simple pup tent to a big imported camping trailer. The most popular type of tent is probably the umbrella tent, with its four corner poles; at least, we see more of this kind than of any other kind. The umbrella comes in two sizes, the 10 by 10 for four people and the 12 by 12 for five people. It is easy to put up and even looks nice, for it has a canopy that serves to roof a front porch or kitchen for you. It is usually equipped with a floor of canvas and screens for door and windows. [START OVER]

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12

TEST 2-B
(Manuscript 10)

Line to center copy horizontally	☐
Spacing as shown	☐
Tab 4 indention	☐
Paper Workguide 72	☐
Start to center copy vertically (ignore printing on page)	☐
Title displayed:	
Typed all caps	☐
Centered	☐
2 blank lines	☐
SI 1.31 — fairly easy	☐
Time limit 10 min.	☐

CARE OF THE MACHINE

1. Daily: Clean the type faces by brushing them with a stiff brush or by using some commercial product made for the purpose.
2. Daily: Dust the machine carefully, using a long-handled brush to whisk out the inside and a soft cloth to wipe off the outside.
3. Daily: Wipe off the desk, being sure to wipe under the machine as well as around it.
4. Daily: Keep machine covered when not in use.
5. Weekly: Wipe the carriage rails with a soft cloth that has been dampened in oil. Do not put oil directly on any part of the machine.
6. Monthly: Wipe the cylinder with a soft cloth that has been dampened in alcohol. [START OVER]

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10

TEST 2-C

Line to center table horizontally ..... ☐
Spacing 2 ..... ☐
Start to center vertically .. ☐
Paper Workguide 73 ..... ☐
Tab 3 for columns..... ☐
Spacing between the columns 6 spaces ..... ☐
Time limit 10 min. ..... ☐

BASIC RATING PLAN FOR TIMED WRITINGS
Five Minutes Within Four Errors

Speeds	Lesson 25	Lesson 50	Lesson 75
15–19 wam	Fair	Under Par	Under Par
20–24 wam	Average	Fair	Under Par
25–29 wam	Average	Average	Fair
30–34 wam	Superior	Average	Average
35–39 wam	Excellent	Superior	Average
40–44 wam	Excellent	Excellent	Superior
45–49 wam	Excellent	Excellent	Excellent
50–up wam	Excellent	Excellent	Excellent

[START OVER]

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11

TEST 2-D

Style blocked ..... ☐
Date right margin ..... ☐
Tab 4, center ..... ☐
Body 98 words ..... ☐
Line suitable to letter length ☐
Spacing suitable to letter length ..... ☐
Top margin suitable to letter length ..... ☐
SI 1.36 — normal..... ☐
Paper Workguide 74 ..... ☐
Time limit 10 min. ..... ☐

Today's date

Mr. Carl S. Norman
The Norman Press, Inc.
3947 Fourth Street
Louisville, Kentucky 40201

Dear Mr. Norman:

Please let us know what you would charge to print the two displays that I enclose. Details of these two jobs are as follows:

1. We require 5,000 copies of each job.
2. The table should be set in type styles suitable for display in a dark green ink on a light green card, 6 by 4.
3. The listing would be set in a similar type size and displayed in dark brown ink on a buff or a tan card, 6 by 4.

We would ask for assurance that the cards could be delivered before January 3.

Yours truly,

Dexter K. Lynch

Closing lines

[START OVER]

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11

PART TWO TEST

APPENDIX H

INDIVIDUAL STUDENT DATA

INDIVIDUAL SUBJECT DATA

CONTROL GROUP

Student Number	Sex	Age	Pretest Score	Posttest Speed	Posttest Errors
1	Male	24	6	Withdrew	
2	Female	34	21	37	4
3	Female	17	21	21	1
4	Female	27	13	36	8
5	Female	19	7	19	8
6	Female	17	16	42	10
7	Female	34	17	Withdrew	
8	Female	17	14	37	9
9	Male	30	10	Withdrew	
10	Female	24	18	Withdrew	
11	Female	28	12	Withdrew	
12	Female	23	15	26	7
13	Male	16	13	17	8
14	Male	21	21	35	9
15	Female	19	11	Withdrew	
16	Female	20	19	26	9
17	Female	21	12	24	17
18	Male	23	12	29	7
19	Female	21	4	Withdrew	
20	Female	25	18	28	6
21	Female	23	22	36	8
22	Female	29	24	Withdrew	
23	Male	24	24	16	7
24	Female	35	18	Withdrew	
25	Female	17	14	30	6
26	Male	25	11	16	11
27	Female	59	14	24	7
28	Female	19	10	Withdrew	
29	Female	27	11	Withdrew	
30	Female	22	16	Withdrew	

INDIVIDUAL SUBJECT DATA

EXPERIMENTAL GROUP

Student Number	Sex	Age	Pretest Score	Posttest Speed	Posttest Errors
31	Female	47	7	12	8
32	Female	34	8	21	7
33	Female	19	19	45	3
34	Male	55	18	Withdrew	
35	Female	31	17	18	5
36	Male	33	6	20	2
37	Female	31	19	45	4
38	Male	63	18	23	4
39	Female	18	7	22	8
40	Female	18	21	42	4
41	Female	18	22	37	2
42	Male	18	16	32	21
43	Female	22	18	35	8
44	Female	18	20	35	4
45	Female	18	21	41	7
46	Male	27	9	Withdrew	
47	Female	19	7	Withdrew	
48	Female	64	4	17	15
49	Female	23	17	29	6
50	Male	19	9	40	17
51	Female	19	13	Withdrew	
52	Male	25	4	27	6
53	Female	19	13	40	1
54	Female	21	13	43	0
55	Female	18	19	38	6
56	Female	40	18	34	4
57	Female	26	18	Withdrew	
58	Female	21	20	40	4
59	Male	35	9	18	7
60	Female	38	10	20	8

UNIVERSITY OF CALIF.
LOS ANGELES

AUG 20 1976

CLEARINGHOUSE FOR
JUNIOR COLLEGES